

Claims

- [c1] 1. An automotive door panel assembly comprising:
a door trim panel comprising:
an outer trim panel surface;
an inner trim panel surface; and
at least one tubular stake including outer tubular walls protruding from said inner trim panel surface, said tubular stake including a OLE_LINK4 seal sleeve
OLE_LINK4 flow channel connecting said outer trim panel surface to said inner trim panel surface;
an overmold material applied to said outer trim panel surface, said overmold material filling said seal sleeve flow channel and generating an overmold seal sleeve skin on said outer tubular walls;
a door main panel assembly including at least one clip hole, said tubular stake positioned within said at least one clip hole; and
wherein said overmold seal sleeve skin removably engages said at least one clip hole to form a primary seal between said door trim panel and said door main panel assembly.
- [c2] 2. An automotive door panel assembly as described in

claim 1, wherein said overmold seal sleeve skin comprises:

a chamfered guide top; and

a seal sleeve wall secured to said outer tubular walls.

[c3] 3. An automotive door panel assembly as described in claim 1, further comprising:
an outer overmold seal formed on an edge surface of said outer trim panel surface, said outer overmold seal engaging said door main panel assembly to form a secondary sealing surface between said door trim panel and said door main panel assembly.

[c4] 4. An automotive door panel assembly as described in claim 1, wherein said overmold seal sleeve skin further comprises:
an engagement notch feature formed in said seal sleeve wall, said engagement notch feature engaging said at least one clip hole when said tubular stake is positioned within said at least one clip hole.

[c5] 5. An automotive door panel assembly as described in claim 1, wherein said trim panel comprises:
a plurality of said tubular stakes positioned around a perimeter mounting region of said door trim panel.

[c6] 6. An automotive door panel assembly as described in

claim 1, wherein said seal sleeve skin comprises a tubular sleeve in radial compression within said clip hole.

[c7] 7. An automotive door panel assembly as described in claim 1, wherein said seal sleeve skin comprises a skin end in contact with said inner trim panel surface.

[c8] 8. A weather resistant panel assembly comprising:
a trim panel comprising:
an outer trim panel surface;
an inner trim panel surface; and
at least one tubular stake including a seal sleeve flow channel connecting said outer trim panel surface to said inner trim panel surface;
an overmold material applied to said outer trim panel surface, said overmold material filling said seal sleeve flow channel and generating an overmold seal sleeve skin;
a main panel assembly including at least one clip hole, said overmold seal sleeve skin positioned within said at least one clip hole; and
wherein said overmold seal sleeve skin removably engages said at least one clip hole to form a primary seal between said trim panel and said main panel assembly.

[c9] 9. A weather resistant panel assembly as described in claim 8, wherein said overmold seal sleeve skin com-

prises:

a chamfered guide top; and

a seal sleeve wall secured to said outer tubular walls.

- [c10] 10. A weather resistant panel assembly as described in claim 8, further comprising:
an outer overmold seal formed on an edge surface of said outer trim panel surface, said outer overmold seal engaging said main panel assembly to form a secondary sealing surface between said trim panel and said main panel assembly.
- [c11] 11. A weather resistant panel assembly as described in claim 8, wherein said overmold seal sleeve skin further comprises:
an engagement notch feature formed in said seal sleeve wall, said engagement notch feature engaging said at least one clip hole when said tubular stake is positioned within said at least one clip hole.
- [c12] 12. A weather resistant panel assembly as described in claim 8, wherein said trim panel comprises:
a plurality of said tubular stakes positioned around a perimeter mounting region of said trim panel.
- [c13] 13. A weather resistant panel assembly as described in claim 8, wherein said seal sleeve skin comprises a tubu-

lar sleeve in radial compression within said clip hole.

[c14] 14. A weather resistant panel assembly as described in claim 8, wherein said seal sleeve skin comprises a skin end in contact with said inner trim panel surface.

[c15] 15. A method of manufacturing a moisture resistant panel assembly comprising:
forming a trim panel comprising: an outer trim panel surface; an trim panel inner surface; and a tubular stake including outer tubular walls protruding from said inner trim panel surface; said tubular stake including a seal sleeve flow channel connecting said outer trim panel surface to said inner trim panel surface;
placing said trim panel in an overmolding assembly;
injecting an overmold material such that:
said overmold material flows onto said outer surface to form an outer overmold skin;
said overmold material flows through said seal sleeve flow channel from said outer trim panel surface towards said inner trim panel surface; and
said overmold material flows over said tubular stake to form an overmold sleeve skin on said outer tubular walls.

[c16] 16. A method of manufacturing a moisture resistant panel assembly as described in claim 15, further comprising:

installing said trim panel into a main panel assembly such that said tubular stake is positioned within at least one clip hole formed in said main panel assembly; and generating a seal between said trim panel and said main panel assembly by way of said overmold sleeve skin removably engaging said at least one clip hole.

[c17] 17. A method of manufacturing a moisture resistant panel assembly as described in claim 15, further comprising:
forming an engagement feature in said overmold sleeve skin such that said overmold sleeve skin lockingly engages said at least one clip hole.

[c18] 18. A method of manufacturing a moisture resistant panel assembly as described in claim 15, further comprising:
flowing said overmold material on said outer trim panel surface into contact with an edge surface of said outer trim panel surface to form an outer overmold seal, said outer overmold seal engaging said main panel assembly to form a secondary sealing surface between said trim panel and said main panel assembly.

[c19] 19. A method of manufacturing a moisture resistant panel assembly as described in claim 18, further comprising:

installing said trim panel into a main panel assembly such that said tubular stake is positioned within at least one clip hole formed in said main panel assembly; and generating a seal between said trim panel and said main panel assembly by way of said overmold sleeve skin removably engaging said at least one clip hole; generating a secondary seal between said trim panel and said main panel assembly by forcing said outer overmold seal into engagement with said main panel assembly.

[c20] 20. A manufacturing a moisture resistant panel assembly as described in claim 16, wherein said overmold sleeve skin is placed in radial compression to seal said at least one clip hole.